

AMENDMENTS TO THE DRAWINGS

The attached sheet of drawings includes changes to Figures 9 and 10.

Attachment: Replacement sheet
 Annotated sheet showing changes

REMARKS

Claims 4-15 are pending in this application. Claims 4-15 stand rejected. By this Amendment, claims 4, 5, and 10 have been amended. The amendments made to the claims do not alter the scope of these claims, nor have these amendments been made to define over the prior art. Rather, the amendments to the claims have been made to improve the form thereof. In light of the amendments and remarks set forth below, Applicants respectfully submit that each of the pending claims is in immediate condition for allowance.

Figures 9 and 10 have been objected to for not being labeled as prior art. Applicants submit herewith revised Figures labeling Figures 9 and 10 as prior art. Therefore, Applicants respectfully request reconsideration and withdrawal of the objection.

Claim 9 stands rejected under 35 U.S.C. § 112, first paragraph, as failing to comply with the written description requirement. Specifically, the Office Action objects to "Japanese paper."

Japanese paper in claim 9 is defined in JIS as "A Japanese paper is a unique paper which has been developed in Japan- A Japanese paper is originally produced by hand using best fiber as raw material and "neri" (viscous liquid of a plant)." The fiber of Broussonetia and Edgeworthia, which are the raw material, is long. Therefore, Japanese papers have generally higher strength than that of foreign papers made of wooden pulp.

Thus, Applicants respectfully submit that the use of the term "Japanese paper" fully complies with 35 U.S.C. § 112.

In claim 4, a plurality of ligneous plates adhered by adhesive sheets means that a ligneous plywood layer 5 is formed by laminating a plurality of the ligneous thin

plates 9 via a plurality of adhesive sheets 10 (the ligneous thin plates 9 and the adhesive sheets 10 are laminated alternately), that is, the adhesive sheet 10 is used to prepare the ligneous plywood layer 5, as shown in FIG. 2.

Further, a decorative material located outside of the ligneous plates means that a decorative material 4 is located at the outside of the ligneous plywood layer 5 which is formed by laminating a plurality of the ligneous thin plates 9 and a plurality of adhesive sheets 10.

Claims 4-15 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over the admitted prior art. Applicants respectfully request reconsideration and withdrawal of this rejection.

The APA states that a ligneous plywood layer 17 is formed by coating adhesive to ligneous thin plates and laminating the ligneous thin plates. In addition, surface materials 15 are adhered to a core 14 via an adhesive layer 19. In the prior art, the problem is that when the steering wheel 13 is subjected to high humidity for a long time, because the adhesive layer used in the surface material 15 is thin and moisture easily permeates the interior of the surface material 15, in some cases, the moisture causes the interior of the surface material 15 to swell. Cracks 21 are generated in the joining portion 18 between the surface materials 15 and 15 when swelling occurs. As a result, a problem arises in that the coating film 20 is split along the joining portion 18 and crack 21 is generated in the steering wheel 13.

In order to solve the problem, the object of the present invention is to improve moisture resistance of the steering wheel over the conventional steering wheel. Among several means for solving the problem, the present inventors worked out the present invention, that is, the steering wheel of claim 4. In other words, the characteristics of the present invention are by using the adhesive sheet comprising a non-woven base

material in which a moisture resistant adhesive resin is permeated, a plurality of the ligneous thin plates 9 are laminated via a plurality of the adhesive sheets, and thereby the ligneous plywood layer is formed, and then the surface decorative material is positioned at the outside of the 'igneous plywood layer.

The Examiner recognizes that APA does not disclose the adhesive sheet comprising a non-woven fabric, in which moisture resistant resin is permeated, as a base material.

However, the Examiner insists that it is common knowledge in the art to use the adhesive sheet comprising the non-woven base material in which a moisture resistant adhesive resin is permeated in order to prevent cracking, and four citations are cited. These citations disclose that fabrics or the like is adhered to another layer using resin (adhesive resin). However, these citations neither disclose nor suggest using an adhesive sheet to prepare ligneous plywood layer made by adhering a plurality of ligneous thin plates in order to improve moisture resistance. Each of the references is addressed below.

US 5,840,144

US 5,840,144, at column 5, lines 9 to 13 discloses to laminate a stabilizing back coating to a wood veneer in which cracks are easily generated. This merely recommends adding backing to a wood veneer, and this neither discloses nor suggests improvement of moisture resistance.

Japanese Unexamined Patent Application First Publication No. H04-161331

JP-A-H04-161331 discloses a manufacturing method for a water-shedding decorative plywood. The core-laminated sheet 1 and the woody decorative veneer 5 are adhered via a non-woven fabric 4. The outermost surface of the woody decorative

veneer 5 is coated with a water-shedding silicone resin coating. In addition, it is disclosed that as the thickness is increased, the adhesive force is improved, and permeation of moisture is prevented by inserting the non-woven fabric 4 between the core-laminated sheet 1 and the woody decorative veneer 5. See page 2, left bottom column, lines 11 to 19. However, the non-woven fabric 4 is inserted only between the core-laminated sheet 1 and the woody decorative veneer 5. That is, only one non-woven fabric 4 is used. It is possible to consider that ligneous plywood layer, in which a plurality ligneous thin plates are laminated by the adhesive sheets, corresponds to the core-laminated sheet 1 in JP-A-H04-161331. However, JP-A-H04-161331 neither discloses nor suggests the core-laminated sheet 1 is produced by using an adhesive sheet.

US 6,645,565

The Abstract of the '565 patent merely discloses that the textile fabric is coated with resin.

Japanese Unexamined Patent Application First Publication No. H03-239543

The object of this invention is to solve the problem that when an unsaturated polyester resin coating is coated and cured on the right face of the woody decorative veneer, the surface coated with the coating dents and warps because the unsaturated polyester resin is cured and shrunk, and this curing and shrinking exert a harmful influence on the finishing operation of the coated surface such as puff-polishing. In JP-A-H03-239543, the problem is solved by forming a fiber-reinforced resin layer, in which woody flakes are dispersed, at the right face of the metal plate, forming a coating film made of a unsaturated polyester resin on the fiber-reinforced resin layer, and forming the fiber-reinforced resin layer at the other face of the metal plate. JP-A-H03-239543 does not disclose a ligneous plywood layer in which a plurality of

ligneous plates are laminated via the adhesive sheets, and neither discloses nor suggests improvement of moisture resistance.

Ohsumi (US 4,890,656)

Ohsumi at column 2, lines 39 to 41, discloses "The backing 2 is attached in order to prevent cracking and/or warping of the material sheet 1." Based on this mention, it is possible to think that the backing 2 is used to prevent cracking and/or warping, and fix the shape of the material sheet 1. However, this mention does not directly relate to improvement of moisture resistance. In addition, column 3, lines 38 to 41, discloses "A rough sheet made of Japanese paper or non woven fabric may be inserted between the decorative sheet 5 and the base board 6 for better bonding." Based on this mention, it is possible to think that the adhesive is improved by inserting the rough sheet. However, this does not directly relate to improvement of moisture resistance. Ohsumi neither discloses nor suggests the adhesive technique for improving moisture resistance. Furthermore, it is possible to think that the ligneous plywood layer, in which a plurality of ligneous thin plates are laminated via the adhesive sheets, corresponds to the base board 6 in Ohsumi. However, Ohsumi neither discloses nor suggests the base board 6 is produced by using an adhesive sheet.

Conclusion

In summary, the Applicant believes that the characteristics of the present invention are not common knowledge. In other words, usage of the adhesive sheet in the production of the ligneous plywood layer, in which a plurality of ligneous thin plates are laminated, in order to improve moisture resistance is not common knowledge. Therefore, the present invention is not obvious over APA.

The Office Action rejected claim 4 under 35 U.S.C. § 103(a) as being unpatentable over the combination between APA and Ohsumi (US 4,890,565). Applicants respectfully request reconsideration and withdrawal of this rejection.

As explained above, Ohsumi neither discloses nor suggests adhesive technique for improving moisture resistance. Therefore, it is very difficult to use the backing disclosed in Ohsumi to improve moisture resistance. In addition, Ohsumi neither discloses nor suggests using of the adhesive sheet in the production of the ligneous plywood layer in which a plurality of ligneous plates are laminated. Therefore, the combination between APA and Ohsumi does not achieve the present invention. Therefore, the present invention is not obvious over the combination between APA and Ohsumi.

Applicants have responded to all of the rejections and objections recited in the Office Action. Reconsideration and a Notice of Allowance for all of the pending claims are therefore respectfully requested.

In view of the above, each of the presently pending claims in this application is believed to be in immediate condition for allowance. Accordingly, the Examiner is respectfully requested to withdraw the outstanding rejection of the claims and to pass this application to issue.

If the Examiner believes an interview would be of assistance, the Examiner is welcome to contact the undersigned at the number listed below.

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Respectfully submitted,

By 

Ian R. Blum

Registration No.: 42,336
DICKSTEIN SHAPIRO LLP
1177 Avenue of the Americas
New York, New York 10036-2714
(212) 277-6500
Attorney for Applicants

IRB/mgs
Attachments

ANNOTATED SHEET SHOWING CHANGES

FIG. 9

PRIOR ART

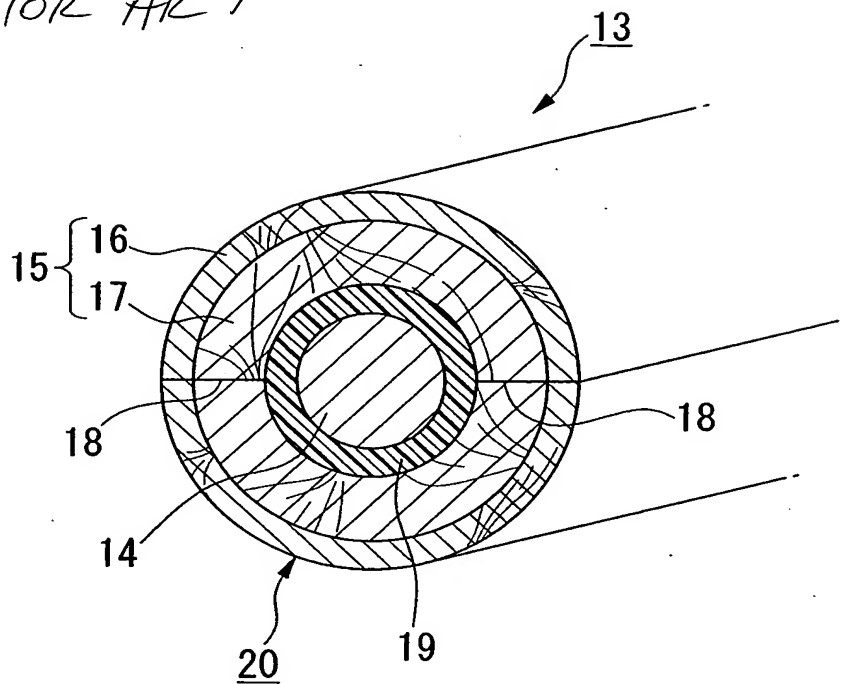
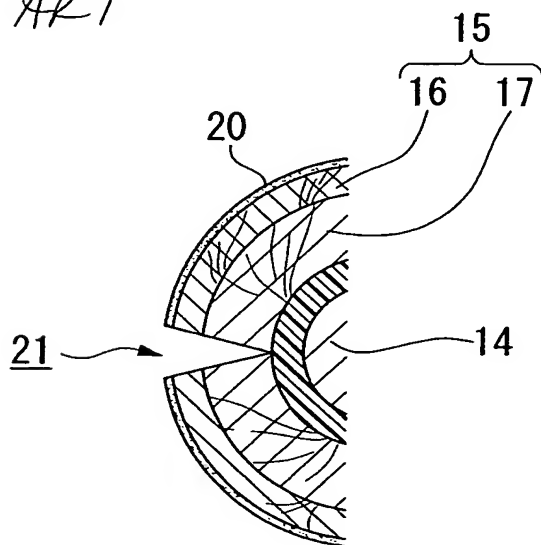


FIG. 10

PRIOR ART



Application No. 10/653,994

Docket No.: X2007.0139

REPLACEMENT SHEET